

REMARKS/ARGUMENTS

Claims 1-30 were pending. Claims 1, 4, 6, 8, 10, 11, 14, 16, 18 and 20 have been amended. Applicants submit that no new matter has been inserted into the application as a result of these amendments.

Claims 11-13, 16-20, 26, and 28-30 stand rejected under 35 U.S.C. §101 as being non-statutory subject matter. Claims 1-7, 10-17, 20-23, and 25-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/0233910 to Chen et al. (hereinafter "Chen") in view of U.S. Patent Application Publication No. 2003/0084241 to Lubbers et al. (hereinafter "Lubbers") and further in view of U.S. Patent No. 6,779,063 to Yamamoto (hereinafter "Yamamoto"). Claims 8, 9, 18, 19, and 24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Lubbers and further in view of Yamamoto and further view of U.S. Patent No. 5,774,640 to Kurio (hereinafter "Kurio").

Reconsideration in view of the amendments above and the remarks below is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 1-7, 10-17, 20-23, and 25-30

Claims 1-7, 10-17, 20-23, and 25-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Lubbers and further in view of Yamamoto.

Applicants have amended independent claims 1, 4, 6, 10, 11, 14, 16 and 20, and Applicants submit that Chen, Lubbers, and Yamamoto, either alone or in combination, fail to suggest or disclose each of the features recited in independent claims 1, 4, 6, 10, 11, 14, 16 and 20. For example, claim 1 recites, in part:

wherein the first channel controllers are grouped into clusters comprising a plurality of first channel controllers, wherein each of the first channel controllers in a cluster monitors a status indicator of each of the other first channel controllers in the cluster, the status indicator including an operating state of an associated first channel controller, and wherein if a first first channel controller detects that a second first channel controller in the cluster is not

operating normally, the first channel controller takes over processing for the second first channel controller.

Applicants submit that none of the cited references teach or suggest the failover processing feature recited in claim 1.

Furthermore, amended claim 4 also recites a failover features similar to that added to claim 1, with the additional features including issuing a reset command to a first channel controller that is not functioning properly, acquiring processing information about the first channel controller from a shared drive, and using the acquired information to take over processing of the first channel controller that is not functioning properly:

wherein the first channel controllers are grouped into clusters comprising a plurality of first channel controllers, wherein each of the first channel controllers in a cluster monitors a status indicator of each of the other first channel controllers in the cluster, the status indicator including an operating state of an associated first channel controller, and wherein if a first first channel controller detects that a second first channel controller in the cluster is not operating normally, the first channel controller performs the following fail-over processing:

the first first channel controller issues a reset command to the second first channel controller;

if the second first channel controller sends a response to the first first channel controller acknowledging receipt of the reset command, the first first channel controller acquires processing information about the second first channel controller from a shared logical volume, and the first first channel controller uses the acquired information to take over processing for the second first channel controller.

Applicants submit that none of the cited references teach or suggest the failover processing feature recited in claim 4.

Chen merely discloses a system for storing and/or retrieving data which can be implemented on a storage area network. Chen, Abstract. Data storage may be accessed utilizing Device Level Access Protocol ("DLAP"), which transmits and retrieves data on a block level, and/or File Level Access Protocol ("FLAP"), which transmits and receives data on a file level. Chen, paragraph 0039.

Applicants submit that the Chen fails to teach or suggest the failover features recited in claims 1 and 4 described above. Chen is merely concerned with providing redundant

storage in the event that a disk in the storage system fails data will not be lost. See Chen, paragraphs 0066-0069. Chen is silent as to the failover features of claims 1 and 4 where channel controllers for handing I/O requests to a storage system are clustered, and the clustered channel controllers monitor the operating status of the other channel controller in the group so that in the event that one of the channel controllers begins to operate abnormally, another channel controller in the cluster can take over processing for the channel control that is not operating normally. Therefore, Applicants submit that Chen fails to teach or suggest failover features recited in claims 1 and 4.

Lubbers fails to teach or suggest the failover features recited in claims 1 and 4 describe above. Lubbers merely discloses systems, methods and software for implementing a virtualized storage system where physical storage is carved into units called physical segments ("PSEGs") and logical storage is implemented in atomic logical storage units called "RStores." A user is presented with a logical disk comprising a pool of physical storage devices. The pool of physical storage devices is carved into redundant storage sets. Storage access requests are expressed in terms of logical disk addresses which are mapped to the PSEGs containing data represented by the logical addresses. Lubbers, Abstract.

Applicants submit that Lubbers, like Chen, is merely concerned with providing redundant storage in the event that a disk in the storage system fails data will not be lost. See Lubbers, paragraphs 0038-0040, 0052 and 0076. Lubbers is also silent as to the failover features of claims 1 and 4 where channel controllers for handing I/O requests to a storage system are clustered, and the clustered channel controllers monitor the operating status of the other channel controller in the group so that in the event that one of the channel controllers begins to operate abnormally, another channel controller in the cluster can take over processing for the channel control that is not operating normally. Therefore, Applicants submit that Lubbers fails to teach or suggest failover features recited in claims 1 and 4.

Yamamoto similarly fails to teach the failover features recited in independent claims 1 and 4 described above. Yamamoto merely discloses a direct access storage system that includes direct access storage that can be shared between a block interface and a file interface. Yamamoto, col. 1 , lines 65-67. The storage system described in Yamamoto reads/writes data to

a storage media in response to SCSI, NFS, CIFS, or HTTP-type read/write requests. Yamamoto, Abstract. The storage controller of the storage system in Yamamoto may include a plurality of interface adapters of the same type in order to enable the storage system to continue to process requests from the host system, even if an interface adaptor of a given type fails. See Yamamoto, col. 3, lines 50-55.

Applicants submit, however, that Yamamoto fails to disclose or suggest all of the elements of the failover features recited in claims 1 and 4. For example, the channel controllers recited in claims 1 and 4 are grouped into clusters and each of the channel controllers monitor the operation of the other channel controllers in the cluster to determine whether the other channel controllers are operating properly. If a channel controller determines that another channel controller in the cluster is not operating properly, the channel controller takes over processing the malfunctioning channel controller. Yamamoto is silent as to the clustering the interface adaptors such that the interface adaptors in the cluster monitor the operation of the other interface adaptors in the cluster and configuring the interface adaptors such that a malfunctioning interface adaptor takes over processing for a failed interface adaptor.

Yamamoto also fails to teach or suggest a channel controller that "issues a reset command to [a] channel controller" that is not operating normally and "acquires processing information about the second first channel controller from a shared logical volume, and ... uses the acquired information to take over processing for [the] channel controller" that is not operating normally. Yamamoto is completely silent as to an interface adaptor sending a reset instruction to another interface adaptor that has experience a failure, much less acquiring processing information about the failed interface adaptor from a shared volume and using the acquired information to take over processing for the failed interface adaptor. Therefore, Applicants submit that Yamamoto fails to teach or suggest failover features recited in claims 1 and 4.

Accordingly, even if Chen, Lubbers and Yamamoto were combined as suggested by the Office Action, the combination would fail to teach all of the features recited independent claims 1 and 4.

Independent claims 6, 10, 11, 16 and 20 should be allowable for similar reasons as claim 1, and independent claim 14 should be allowable for similar reasons as claim 4. Furthermore, dependent claims 2, 3, and 21, which depend from claim 1, claims 5 and 22, which depend from claim 4, claims 7 and 23, which depend from claim 6, claims 12, 13, and 26, which depend from claim 11, claims 15 and 27, which depend from claim 14, claims 17 and 28, which depend from claim 16, claim 25, which depends from claim 10, and claim 30, which depends from claim 20, should also be allowable at least due to their dependence from independent claims 1, 4, 6, 10, 11, 14, 16 and 20, respectively.

Claims 8, 9, 18, 19, and 24

Claims 8, 9, 18, 19, and 24 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chen in view of Lubbers and further in view of Yamamoto and further view of Kurio.

Applicants submit that independent claim 18 and 24 should be allowable for at least the same rationale as independent claim 4, because independent claims 8 and 24 recite limitations that are substantially similar to those recited in independent claim 4. As discussed above, Chen, Lubbers, and Yamamoto, either alone or in combination, fail to disclose or suggest each of the features recited in claim 4. Kurio provides no teaching or suggestion that would remedy this deficiency. Accordingly, Applicants respectfully request the withdrawal of the rejections of claim 8 and 18.

Furthermore, claims 9 and 24, which depend from claim 8, and claims 19 and 29, which depend from claim 18, should also be allowable at least due to their dependence from independent claims 8 and 18 respectively.

Appl. No. 10/754,371
Amdt. dated October 30, 2007
Reply to Office Action of August 31, 2007

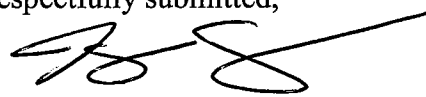
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CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858-350-6100.

Respectfully submitted,



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